

REMARKS/ARGUMENTS

Claims 1 – 5 are currently pending in this application.

Claim Rejections - 35 USC § 103

Claims 1, 2, 4 and 5 stand rejected under 35 USC § 103(a) as being unpatentable over Broyan (U.S. Patent No. 4,196,746 in view of Edwards et al. (U.S. Patent No. 5,025,829). Applicants respectfully traverse this rejection.

The invention as claimed in Claim 1 is a pump including at least one shield valve controlled by a conveyed medium and which has a valve disk of flexible material which is clamped in a central region and is moveable between an open position and a closed position. In the closed position, the valve closes at least one valve opening. Extensions project from the valve disk in step form for preventing a sudden, flat abutment of the valve disk on a valve abutment surface and/or for limiting a valve opening motion. Gaps are located between the extensions and the valve disk and define through flow openings of the valve. The valve disk is connected by the step-shaped extensions to a sealing ring surrounding the valve disk and clamped between two housing portions.

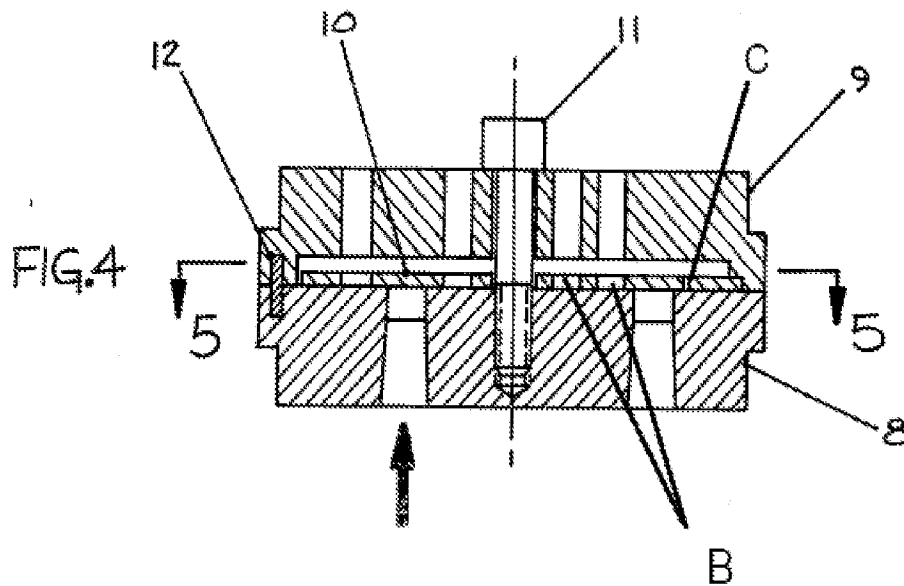
Broyan fails to show or suggest a valve disk of flexible material clamped in a central region as is claimed in claim 1. The embodiment of Figures 4 and 5 of Broyan, relied upon in the Action, describes “The seat 8 is shown in FIG. 4 joined to

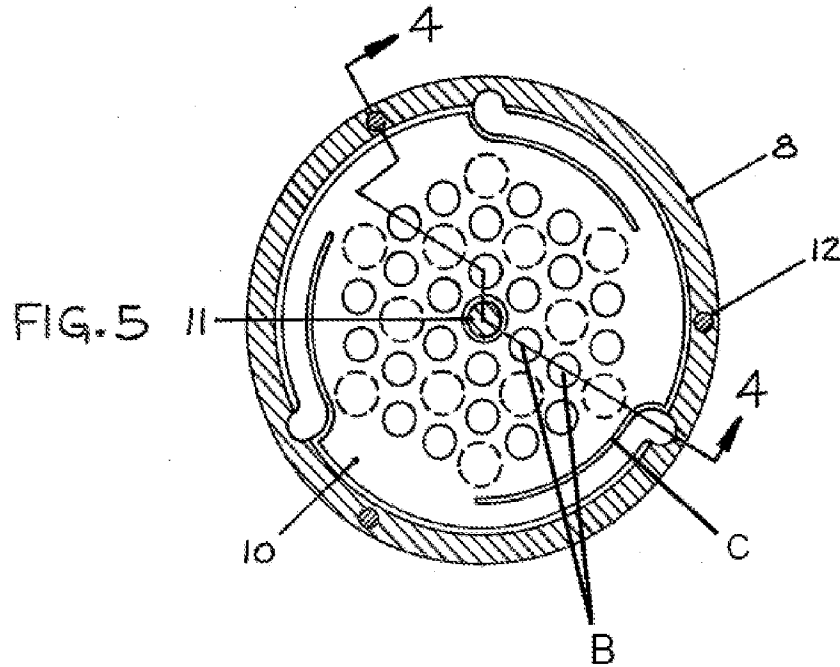
the guard 9 at the periphery of the valve via the metallic pins 12. The plate 10 and guard 9 are held in position around the periphery by three pins equally spaced (FIG. 5). The seat 8 and guard 9 are further joined to one another by threaded center bolt 11.” Emphasis added. See column 3, lines 47 – 52.

Furthermore, Broyan fails to show or suggest gaps (14) located between the extensions and the valve disk that define through flow openings of the valve as is claimed in claim 1. The through flow openings of the plate of Broyan are described in column 2, lines 38: “As the gas becomes pressurized, it causes the plate 3 to lift against the spring pre-load away from the valve seat 1 and toward the guard 2. As the plate 3 moves in the direction of guard 2 and exhaust ports B, which are smaller than inlet port A, they are brought into registry. Thus, along line 2--2, two exhaust ports B are produced in plate 3 and guard 2 for each port A in seat 1. Also it can be seen from FIGS. 2 and 3 (see inlet port A) that every 60 degrees will produce two exhaust ports B.”

Accordingly, in contrast to the present invention, the valve disk of Broyan is not clamped in a central region. Additionally, the through flow provided in the valve disk (3) of Broyan is via a plurality of openings in the interior portion of the disk. Thus, contrary to the present invention, there is no requirement for gaps located between the extensions and the valve disk that define the through flow openings of the valve. The through flow openings of the embodiment of Figures 4

and 5 of Broyan are shown below in the modified Figures 4 and 5 as B. The slot in the valve disk as indicated by C is not and cannot be a through flow opening as is claimed.





Edwards et al. is cited in the Action as remedying the deficiencies of Broyan. However, Edwards et al. merely teach a check valve formed from a flexible valve disk (10) having three windows defined therein. The outer edge (14) forms a sealing ring that is clamped between two housing pieces and the entire central portion of the sealing disk (10) forms the seal against the valve seat (28) shown in Figure 3. Based on the arrangement of Edwards et al., the Edwards valve disk cannot be clamped in a central region or the device would be rendered non-functional. Thus, this claimed feature is absent from both Edwards et al. and Broyan.

Further, while Edwards et al. provides windows located between radially extending spokes (20) there is no suggestion or disclosure of gaps being located

between the extensions and the valve disk that define the through flow openings of the valve. The windows of Edwards et al., which clearly define the through flow openings in the open position of the valve, are not located between the extensions and the valve disk, but rather are located between the sealing ring and the valve disk. Thus, the arrangement does not function in the same manner as the present invention based on these structural differences and the requirement against the central region of the Edwards et al. valve disk being clamped. Accordingly, as these features are wholly absent from Broyan and Edwards et al., the combination of these references does not and cannot render the present invention obvious. Therefore, withdrawal of the Section 103 rejection of claim 1 is respectfully requested.

Claims 2, 4 and 5, depend from claim 1 and should be similarly patentable over this combination for the reasons noted above in connection with claim 1.

In the Action, claim 3 was again rejected under 35 U.S.C. §103 as unpatentable over the combination of Broyan, Edwards et al. and U.S. 5,275,541 to Becker et al. Applicants respectfully traverse this rejection.

Claim 3 depends from claim 1 and is similarly patentable over the combination of Broyan and Edwards et al. for the reasons noted above regarding claim 1. Becker et al. fails to remedy the deficiencies of Broyan and Edwards et al. Becker et al. is in fact the very type of prior art pump over which the present

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invention is an improvement. There is no suggestion or disclosure in Becker et al. of the present shield valve arrangement which prevents the noise associated with the slapping of the valve disk over the whole disk periphery. Accordingly, withdrawal of the Section 103 rejection of claim 3 is respectfully requested.

Based on the arguments presented above, withdrawal of the *35 USC* § 103(a) rejection of claims 1 – 5 is respectfully requested.

Conclusion

If the Examiner believes that any additional minor formal matters need to be addressed in order to place this application in condition for allowance, or that a telephone interview will help to materially advance the prosecution of this application, the Examiner is invited to contact the undersigned by telephone at the Examiner's convenience.

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In view of the foregoing remarks, Applicants respectfully submit that the present application, including claims 1 – 5, is in condition for allowance and a notice to that effect is respectfully requested.

Respectfully submitted,

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